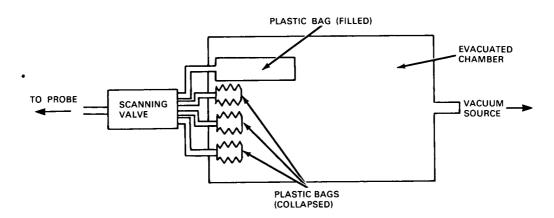
## NASA TECH BRIEF



NASA Tech Briefs are issued by the Technology Utilization Division to summarize specific technical innovations derived from the space program. Copies are available to the public from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia, 22151.

## Plastic Bags in Evacuated Chamber Make Lightweight Gas Sampling System



**The problem:** The collection of exhaust gas of an aircraft or space vehicle during flight for use in analyzing system combustion efficiency. Normal ground test systems cannot be applied to flight conditions because of the weight and size of the equipment involved.

The solution: A lightweight, portable system that uses an evacuated chamber and plastic bags to collect the exhaust gas in flight for later analysis on the ground.

How it's done: Prior to flight, the plastic bags are attached to their inlet ports in the collapsed state and the vacuum chamber and inlet lines are evacuated. The system is connected to the exhaust gas sampling probe and the scanning valve operates to fill the plastic bags sequentially. Impact pressure at the sampling probe entrance is sufficient to drive the gas into the plastic bags during flight. Bags as small as 50 ml in volume at an internal pressure of 4 psia will collect sufficient gas for laboratory analysis.

## Notes:

- 1. The chamber could be sufficiently evacuated during flight by a static pressure port on the side of the vehicle.
- 2. The bags must be of a material that is strong and impervious to hydrogen diffusion.
- 3. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer Flight Research Center P.O. Box 273 Edwards, California, 93523 Reference: B65-10264

**Patent status:** NASA encourages commercial use of this innovation. No patent action is contemplated by NASA.

Source: W. M. Shaffernocker of General Electric under contract to Flight Research Center (FRC-31)

Category 01

This document was prepared under the sponsorship of the National Aeronautics and Space Administration. Neither the United States Government, nor NASA, nor any person acting on behalf of NASA: A. Makes any warranty or representation, express or implied, with respect to the accuracy, completeness, or usefulness of the information contained in

this document, or that the use of any information, apparatus, method, or process disclosed in this document may not infringe privately-owned rights; or B. Assumes any liabilities with respect to the use of, or for damages resulting from the use of, any information, apparatus, method, or process disclosed in this document.